REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejection and further examination are requested.

Rejection under 35 U.S.C. §112, 2nd paragraph:

Claim 7 has been rejected under 35 U.S.C. §112, 2nd paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This rejection is respectfully traversed and submitted to be inapplicable to the claims for the following reasons.

Paragraph 62 further describes the situation when a single mode optical fiber may be used in place of the multimode optical fiber as the multimode optical transmission path. Claim 6 is directed to the situation where a multimode optical fiber is used as the multimode optical transmission path. Claim 7 is directed to the situation where a single mode optical fiber is used as the multimode transmission path. The specification is clear that either single mode or multimode optical fibers can act as multimode transmission paths. It is submitted that claim 7 is in compliance with 35 U.S.C. §112, 2nd paragraph.

Rejections under 35 U.S.C §103(a):

Claims 1, 6, 8, and 15 have been rejected under 35 U.S.C §103(a) as being unpatentable over Stuart (US 6,525,853) in view of Morel (US Pub. 2006/0013527). This rejection is respectfully traversed and submitted to be inapplicable to the claims as amended for the following reasons.

Independent claim 1 is patentable over the combination of Stuart and Morel because claim 1 recites a multimode optical transmission system including, in part, a plurality of light sources for converting a plurality of electrical signals into a plurality of optical signals having

different wavelengths, wherein a wavelength of each of the plurality of optical signals outputted from the plurality of light sources is set such that a propagation constant of a fundamental mode of an optical signal outputted from each of the plurality of light sources is different from a propagation constant of a high order mode of an optical signal, having a different wavelength, outputted from any other of the plurality of light sources. This allows the transmission to be performed without deteriorating the quality of the optical transmission. The combination of Stuart and Morel fail to disclose or suggest this feature of claim 1.

Stuart discloses a laser communication system that combines transmitter/receiver diversity and modal dispersion to increase transmission speed or wavelength-division multiplexing channels. Figure 3 shows a laser system in which both signal diversity and modal dispersion are introduced into N data streams 30^1,30^2,30^n. Each data stream modulates an RF carrier 32 in RF modulators 34^1,34^2,34^n. The RF modulated data signals intensity-modulate N optical transmitters 36^1,36^2,36^n. The RF intensity modulated laser signals are applied to an optics combining mechanism 38 and applied as a combined optical signal to a multimode fiber 40 which provides modal dispersion of the N data streams 30^1,30^2,30^n. At the receiving end, an optical splitter 42 receives the signal and provides N data signals to each of the M optical detectors 42^1,42^2,42^m, where M is greater than N. The optical detectors receive N data signals in different forms due to the modal dispersion from the multimode fiber and the modal-coupling diversity introduced by the optical system coupling. The M optical signals are demodulated and detected in a signal processor 44 to recover the original N data signals.

However, Stuart does not disclose a propagation constant of a fundamental mode of an optical signal having a particular wavelength is set to be different than a propagation constant of a high order mode of an optical signal having a different wavelength. Therefore, Stuart does not disclose or suggest a plurality of light sources for converting a plurality of electrical signals into a plurality of optical signals having different wavelengths, wherein a wavelength of each of the plurality of optical signals outputted from the plurality of light sources is set such that a

propagation constant of a fundamental mode of an optical signal outputted from each of the plurality of light sources is different from a propagation constant of a high order mode of an optical signal, having a different wavelength, outputted from any other of the plurality of light sources. Morel also fails to disclose or suggest this feature of claim 1.

Morel discloses a single fiber optic cable configure as a multiplexer/demultiplexer that allows wavelengths to exit the fiber along its length to feed an optical network in a cost efficient and space efficient manner. According to Figure 6, light propagating along the length of the fiber 103 is reflected out of the fiber 103 at each desired location by one or more Fiber Bragg Gratings (FBG) 105. At each FBG 105, particular wavelengths of light are reflected out of the fiber 103 at different angles. Predominantly, the number of wavelengths reflected by the FBG 105 out of the fiber 103 corresponds to the number of principle modes of the fiber 103. Each of these wavelengths represents a discrete channel that may be optically directed to an optical sensor. Figure 3 discloses the relationship between the propagation constants and the wavelength.

Thus, Morel discloses a general method for selectively outputting a wavelength of light. However, Morel does not disclose that a propagation constant of a fundamental mode of an optical signal having a particular wavelength is set to be different than a propagation constant of a high order mode of an optical signal having a different wavelength. Therefore, Morel does not disclose or suggest a plurality of light sources for converting a plurality of electrical signals into a plurality of optical signals having different wavelengths, wherein a wavelength of each of the plurality of optical signals outputted from the plurality of light sources is set such that a propagation constant of a fundamental mode of an optical signal outputted from each of the plurality of light sources is different from a propagation constant of a high order mode of an optical signal, having a different wavelength, outputted from any other of the plurality of light sources. As a result, claim 1 is patentable over the combination of Stuart and Morel.

Claim 15 is patentable over the combination of Stuart and Morel for reasons similar to those discussed above with regard to claim 1. Specifically, claim 15 recites a light outputting step

of converting a plurality of electrical signals into a plurality of optical signals having different wavelengths, respectively, and outputting the plurality of optical signals, wherein a wavelength of each of the plurality of optical signals outputted from the plurality of light sources is set such that a propagation constant of a fundamental mode of an optical signal outputted from each of the plurality of light sources is different from a propagation constant of a high order mode of an optical signal, having a different wavelength, outputted from any other of the plurality of light sources. As a result, claim 15 is patentable over the combination of Stuart and Morel.

Claims 6 and 8 are dependent on independent claim 1. Therefore, claims 6 and 8 are allowable at least based on their dependency from claim 1.

Claims 2, 4, and 9-11 have been rejected under 35 U.S.C §103(a) as being unpatentable over Stuart (US 6,525,853) in view of Morel (US Pub. 2006/0013527) and further in view of Ip (US 5,608,825). This rejection is respectfully traversed and submitted to be inapplicable to the claims as amended for the following reasons.

Ip is relied upon in the rejection as disclosing a reflected optical signal extraction section for extracting the optical signal reflected by the optical reflection surface. However, it is apparent that Ip fails to disclose or suggest the feature lacking from Stuart and Morel discussed above with regard to independent claim 1. Furthermore, Ip appears to teach away from the above embodiment saying "[this embodiment] is perceived as having a similar drawback of the serial system ... i.e. relatively high transmission losses due to relatively high number of port-to-port passages compared to the number of wavelengths to be multiplexed." (See Column 3, lines 38-44.) Accordingly, no obvious combination of Stuart, Morel and Ip would result in, or otherwise render obvious under 35 U.S.C. §103(a), the features recited in claim 1. Therefore, claims 2, 4, and 9-11 are patentable over the combination of Stuart, Morel and Ip at least based on their dependency from independent claim 1.

Claims 3, 5, 13, and 14 have been rejected under 35 U.S.C §103(a) as being unpatentable over Stuart (US 6,525,853) in view of Morel (US Pub. 2006/0013527) and Ip (US 5,608,825) and

further in view of Beacken (Us Pub. 2004/0105675). This rejection is respectfully traversed and submitted to be inapplicable to the claims as amended for the following reasons.

Beacken is relied upon in the rejection as disclosing a plurality of optical delay sections for adding delays to the optical signals and a multiplexing section for multiplexing the signals output from the delay section. However, it is apparent Beacken fails to disclose or suggest the feature lacking from Stuart, Morel, and Ip discussed above with regard to independent claim 1. Accordingly, no obvious combination of Stuart, Morel, Ip, and Beacken would result in, or otherwise render obvious under 35 U.S.C. §103(a), the features recited in claim 1. Therefore, claims 3, 5, 13, and 14 are patentable over the combination of Stuart, Morel, Ip, and Beacken at least based on their direct or indirect dependency from independent claim 1.

Because of the above-mentioned distinctions, it is believed clear that claims 1-15 are allowable over the references relied upon in the rejections. Furthermore, it is submitted that the distinctions are such that a person having ordinary skill in the art at the time of the invention would not have been motivated to make any combination of the references of record in such a manner as to result in, or otherwise render obvious, the present invention as recited in claims 1-15. Therefore, it is submitted that claims 1-15 are clearly allowable over the prior art of record.

In view of the above amendment and remarks, it is submitted that the present application is now in condition for allowance. The examiner is invited to contact the undersigned by telephone if it is felt that there are issues remaining which must be resolved before allowance of the application.

Respectfully submitted,

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